Dr. Dorothy Wrinch,
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U.S.A.

26th May, 1955.

Dear Dorothy,

Thank you so much for your letter and reprints and for your very kind invitation. I am afraid there is no chance of my getting to America this summer, but I certainly hope to come again some time, and to visit you in rather less of a rush. This year I shall be going to the Biochemistry conference in Brussels in August, and spending my holiday on the Continent after that.

I enclose the numerical values of the Patterson. The accuracy is, of course, considerably lower than for a crystal because of the difficulty of measuring intensities on very small fibre-diagrams having peaks of various shapes and sizes. (The large, unwiedly numerical scale is simply because it was easier to get the figures copied as they were than to reduce them). The origin peak has been added in, assuming it to be as for a uniform density rod of radius 75A, and using the first two observed equatorial maxima to obtain the scale. I have not worked out the absolute scale, but you can obtain it approximately from the fact that the origin peak is due to a "unit cell" in the form of a disc of radius 75A and height 69A surrounded by water.

I think there is now very little doubt that the principal non-axial periodicity of TMV protein is <u>helical</u>, there being 3n+1 units in 3 turns of the helix. This makes a hexagon unit cell impossible. I have no information at present about the 3-dimensional distribution of any reflections, but I believe that the strong 11A reflections on the 2nd and 7th layer-lines are due to structure <u>within</u> the protein sub-unit, and therefore have rotational symmetry of a higher order.

You have probably seen by now the 3-dimensional Patterson of DNA in Acta. I will ask Gosling to send you a set of reprints of all our DNA papers. With best wishes,

Yours,